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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/813,157	03/31/2004	Youn-joon Sung	030681-642	4476
21839 7590 10/30/2007 BUCHANAN, INGERSOLL & ROONEY PC POST OFFICE BOX 1404 ALEXANDRIA, VA 22313-1404			EXAMINER GOLUB, MARCIA A	
			ART UNIT 2828	PAPER NUMBER
			NOTIFICATION DATE 10/30/2007	DELIVERY MODE ELECTRONIC

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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<b>Office Action Summary</b>	<b>Application No.</b> 10/813,157	<b>Applicant(s)</b> SUNG ET AL.	
	<b>Examiner</b> Marcia A. Golub	<b>Art Unit</b> 2828	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 08 May 2007.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-23 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-23 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 08 May 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

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## **DETAILED ACTION**

### ***Election/Restrictions***

Applicant's election with traverse of **claims 1-10** in the reply filed on 1/17/07 is acknowledged. The traversal is on the ground(s) that all the claims have already been examined and examining them would not present a serious burden.

Based on the fact that the current rejection is being made in view of the same reference by Kozaki the restriction requirement is being withdrawn.

### ***Response to Arguments***

Applicant's arguments have been fully considered but they are not persuasive. Regarding applicant's argument that the protective layer 162 does not correspond to buried layer 68 and the dielectric film 164 does not correspond to protective layer 69, since they do not perform the same function. The examiner points out that the function of layers 68 and 69 is not present in the claims. The claims also lack any description of the compositions of said layers. Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

The examiner also points out that the reference discloses two p-type electrodes 120 and 122, both electrodes are composed of metallic elements. As such, there is no distinction between an electrode and a pad electrode. Interpreting the pad electrode 122 to correspond to the upper electrode 57, allows for a consistent interpretation of the claims, since the layers are now in a correct order and the claims do not specify how the layers contact each other. Layer 122 contacts the ridge 111 through the layer 120.

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

**Claim 1-23** are rejected under 35 U.S.C. 102(b) as being anticipated by Kozaki (US 2002/00536760).

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Fig 1 of Kozaki discloses a laser diode comprising:

1. "a substrate (#101); a lower material layer formed on the substrate (#102-105); a resonance layer formed on the lower material layer (#106-109); an upper material layer formed on the resonance layer and having a ridge at the top (#110-111);  
a buried layer formed on the upper material layer and having a contact hole corresponding to the ridge of the upper material layer (#162, paragraph [0232]);  
a protective layer formed on the buried layer and having a material different from the material of the buried layer, and having an opening corresponding to the contact hole of the buried layer (#164, paragraph [0173]); and  
an upper electrode (122) formed on the protective layer (164) to contact an upper surface of the ridge through the contact hole.
2. wherein the lower material layer includes: a first compound semiconductor layer stacked on the substrate (#103); and a lower cladding layer stacked on the first compound semiconductor layer (#105).
3. wherein the first compound semiconductor layer is an n-GaN based group III-V nitride semiconductor layer (paragraphs [0065] and [0150]).
4. wherein the lower cladding layer is an n-GaN/AlGaN layer (paragraph [0154]).
5. wherein the resonance layer further includes:  
a lower waveguide layer (#106) stacked on the lower cladding layer (#105) and having a refractive index larger than that of the lower cladding layer (paragraph [0037]);  
an active layer (#107) stacked on the upper surface of the lower waveguide layer to generate a laser beam; and  
an upper waveguide layer (#109) stacked on the active layer.
6. wherein the refractive indexes of the upper and lower waveguide layers are lower than the refractive index of the active layer (paragraph [0037]).
7. wherein the active layer is a GaN based group III-V nitride compound semiconductor layer of  $\text{In}_x\text{Al}_y\text{Ga}_{1-x-y}\text{N}$  where  $0 \leq x \leq 1$ ,  $0 \leq y \leq 1$ , and  $x+y \leq 1$  (paragraph [0065]).
8. wherein the upper material layer includes:

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an upper cladding layer (#110) stacked on the upper waveguide layer and having a ridge (paragraph [0126]) and a refractive index smaller than that of the upper waveguide layer (paragraph [0037]);

a second compound semiconductor layer formed on the ridge (#111, paragraph [0166]).

9. wherein the upper cladding layer is a p-GaN/AlGaN layer (paragraph [0164]).

10. wherein the second compound semiconductor layer is a p-GaN based group III-V nitride semiconductor layer (paragraph [0166]).

Regarding **claims 11-23**, the arguments applied above to the apparatus described with regards to claims 1-10 are applicable to the method claims as well. In addition paragraphs 0164-0174 recite the fabrication method steps as required by the claims.

**THIS ACTION IS MADE FINAL.** See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Marcia A. Golub whose telephone number is 571-272-8602. The examiner can normally be reached on M-F 9-6 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Minsun Harvey can be reached on 571-272-1835. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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